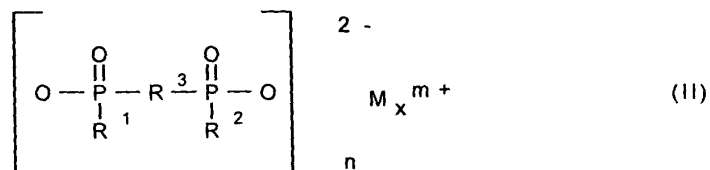
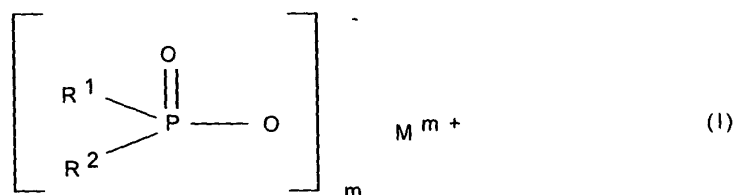


## Patent claims:

1. A fire-protection coating which forms an insulating layer and is based on substances which, in the event of a fire, form a foam layer and form carbon, on film-forming binders, on blowing agents, and on conventional auxiliaries and additives, which comprises a phosphinic salt of the formula (I) and/or a diphosphinic salt of the formula (II), and/or their polymers,



where

$\text{R}^1, \text{R}^2$  are identical or different and are  $\text{C}_1\text{-C}_6$ -alkyl, linear or branched and/or aryl;

$\text{R}^3$  is  $\text{C}_1\text{-C}_{10}$ -alkylene, linear or branched,  $\text{C}_6\text{-C}_{10}$ -arylene, -alkylarylene, or -arylalkylene;

M is Mg, Ca, Al, Sb, Sn, Ge, Ti, Zn, Fe, Zr, Ce, Bi, Sr, Mn, Li, Na, K, and/or a protonated nitrogen base;

m is from 1 to 4;

n is from 1 to 4;

x is from 1 to 4.

2. The fire-protection coating which forms an insulating layer, as claimed in claim 1, wherein M is calcium, aluminum, or zinc.
3. The fire-protection coating which forms an insulating layer, as claimed in claim 1 or 2, wherein R<sup>1</sup> and R<sup>2</sup> are identical or different and are C<sub>1</sub>-C<sub>6</sub>-alkyl, linear or branched, and/or phenyl.
4. The fire-protection coating which forms an insulating layer, as claimed in one or more of claims 1 to 3, wherein R<sup>1</sup> and R<sup>2</sup> are identical or different and are methyl, ethyl, n-propyl, isopropyl, n-butyl, tert-butyl, n-pentyl and/or phenyl.
5. The fire-protection coating which forms an insulating layer, as claimed in one or more of claims 1 to 4, wherein R<sup>3</sup> is methylene, ethylene, n-propylene, isopropylene, n-butylene, tert-butylene, n-pentylene, n-octylene or n-dodecylene; phenylene or naphthylene; methylphenylene, ethylphenylene, tert-butylphenylene, methylnaphthylene, ethylnaphthylene or tert-butylphenylene; phenylmethylene, phenylethylene, phenylpropylene or phenylbutylene.
6. The fire-protection coating which forms an insulating layer, as claimed in one or more of claims 1 to 5, which comprises
  - from 5 to 30 parts by weight of film-forming binder,
  - from 10 to 50 parts by weight of substance which forms a foam layer,
  - from 5 to 25 parts by weight of a substance which forms carbon,
  - from 5 to 25 parts by weight of a blowing agent, and
  - from 10 to 50 parts by weight of conventional auxiliaries and additives,and
  - from 1 to 10 parts by weight of aluminium diethylphosphinate.

7. The fire-protection coating which forms an insulating layer, as claimed in one or more of claims 1 to 6, which comprises

from 10 to 25 parts by weight of film-forming binder,  
from 15 to 40 parts by weight of substance which forms a foam layer,  
from 7 to 15 parts by weight of a substance which forms carbon,  
from 7 to 15 parts by weight of a blowing agent, and  
from 20 to 40 parts by weight of conventional auxiliaries and additives,

and

from 2 to 5 parts by weight of aluminium diethylphosphinate.

8. The fire-protection coating which forms an insulating layer, as claimed in one or more of claims 1 to 7, wherein the film-forming binders present comprise

homopolymers based on vinyl acetate,  
copolymers based on vinyl acetate, ethylene, and vinyl chloride,  
copolymers based on vinyl acetate and on the vinyl ester of a long-chain, branched carboxylic acid,  
copolymers based on vinyl acetate and di-n-butyl malate,  
copolymers based on vinyl acetate and esters of acrylic acid,  
copolymers based on styrene and esters of acrylic acid, and/or  
copolymers based on esters of acrylic acid,  
vinyltoluene/acryl copolymer,  
styrene/acrylate polymers,  
vinyl/acrylate copolymers,  
self-crosslinking polyurethane dispersions

9. The fire-protection coating which forms an insulating layer, as claimed in one or more of claims 1 to 8, wherein the foam-forming substances present comprise ammonium salts of phosphoric acids and/or polyphosphoric acids.

10. The fire-protection coating which forms an insulating layer, as claimed in one or more of claims 1 to 9, wherein the carbon-forming substances present comprise carbohydrates.

11. The fire-protection coating which forms an insulating layer, as claimed in claim 7, wherein the carbohydrates used comprise pentaerythritol, dipentaerythritol, tripentaerythritol and/or polycondensates of pentaerythritol.

12. The fire-protection coating which forms an insulating layer, as claimed in one or more of claims 1 to 11, wherein the auxiliaries and additives present comprise glass fibers, mineral fibers, kaolin, talc, aluminum oxide, aluminum hydroxide, magnesium hydroxide, precipitated silicas, silicates and/or pulverulent celluloses.

13. The fire-protection coating which forms an insulating layer, as claimed in one or more of claims 1 to 12, wherein the blowing agents present comprise melamine and/or guanidine, or else their salts, and/or dicyandiamides.

14. The fire-protection coating which forms an insulating layer, as claimed in claim 13, wherein the melamine salts used comprise melamine phosphate, melamine cyanurate, melamine borate, melamine silicate, and the guanidine salt used comprises guanidine phosphate.

15. The fire-protection coating which forms an insulating layer, as claimed in one or more of claims 1 to 14, which also comprises melamine polyphosphate.